

# Knowledge, Attitude, and Practice of Ethical Social Media Usage amongst Dentists: A Cross-sectional Questionnaire-based Study

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## ABSTRACT

**Introduction:** Social Media (SM) has proven to be a valuable tool in various fields, including healthcare. However, its improper use can result in several ethical problems.

**Aim:** To evaluate the knowledge, attitude, and practice of ethical SM usage for professional purposes.

**Materials and Methods:** A cross-sectional study was conducted in the Department of Prosthodontics and Crown and Bridge at K.M. Shah Dental College and Hospital Vadodara, Gujarat, India between October 2022 and March 2023. A total of 319 respondents, including dental postgraduates, academicians, and dental practitioners, participated in the survey online through various SM groups. The questionnaire was created by analysing previous literature and reviewed by experts for accuracy. The survey comprised nine questions with three subsections to evaluate knowledge, attitude, and practice of ethical SM usage. The survey was distributed through Google

Forms, and the statistical analysis of the results was conducted using the Chi-square test ( $p < 0.05$ ).

**Results:** A survey found that 238 (75.3%) of users have used SM for over five years. The most commonly used platforms are WhatsApp, Instagram, and Facebook. A total of 153 (48.4%) knew about electronic protected health information, 156 (49.4%) knew about Digital Information Security in Health Care Act (DISHA), and 264 (83.5%) knew about consent's importance. A total of 227 (71.8%) of dentists saw SM as a potential risk to patient privacy, but 248 (78.5%) took consent before sharing and 252 (79.7%) used de-identification measures before posting images. A total of 197 (62.3%) of individuals have not participated in any awareness or sensitisation programs regarding the ethical implications of SM usage.

**Conclusion:** The study found dentists understand and prioritise patient privacy on SM. Regular training and policy updates are crucial for sensitising them regarding ethical use.

**Keywords:** Healthcare, Informed consent, Survey

## INTRODUCTION

The use of social networks has become increasingly popular in recent years. A social network is a set of internet-based applications that allow users to create and share their content. SM can contribute to advancements in healthcare, particularly in research, social organisation, and offline services. However, certain gaps in research need to be addressed, such as the appropriate use of SM based on audience segmentation, evaluating its impact, and addressing privacy concerns [1]. Approximately, one-third of medical professionals and organisations utilise SM platforms, such as blogs, online forums, and websites, to share their experiences through photos, videos, and messages [2].

Online social networks have provided both opportunities and challenges for healthcare users. These platforms facilitate communication among healthcare sectors, promote health programs, and allow patients to connect online. Furthermore, healthcare workers use these networks to share practice guidelines, discuss new research, and stay up-to-date with advancements in their fields. SM has become a popular mode of communication for healthcare practitioners to connect and collaborate [3].

The SM is useful for education, research, clinical trials, public health campaigns, and surveillance. SM can improve professional development and institutional image. However, using SM for research has challenges such as ensuring efficiency, information reliability, informed consent, confidentiality, internet accessibility, managing information overload, and ensuring quality interactions [4].

Digital data and global messaging have changed attitudes towards privacy, and sharing private data in public is now common, whereas it was once a breach of trust [5]. To avoid negative consequences and maintain dental professionalism on SM, refrain from making false statements, sharing unauthorised information, or violating a patient's privacy should be observed. Studying the impact of SM on dental professionalism is essential [6].

The Minister of Health and Family Welfare plans to create the "National Digital Health Authority" to regulate electronic health records and enforce data protection measures. The DISHA will establish this authority and ensure the privacy, confidentiality, and standardisation of electronic health records. However, healthcare providers need to understand the potential impact of DISHA on healthcare information [7].

The SM can offer numerous benefits for dentists, but it's important to be mindful of potential ethical issues that can arise from improper use. Currently, there is limited data available on dentists' awareness levels regarding the ethical conduct of SM. Thus, the current research aimed to gain a deeper understanding of dentists' knowledge, awareness, and ethical practices related to SM use in India.

## MATERIALS AND METHODS

A cross-sectional study was conducted between October 2022, and March 2023 in the Department of Prosthodontics and Crown and Bridge at K.M. Shah Dental College and Hospital in Vadodara, Gujarat, India. The study was approved by the ethics committee with approval number SVIEC/ON/DENT/SRP/OCT/22/33.

The survey was conducted using Google Forms and the participants of the study were invited voluntarily to the online platform through several WhatsApp groups, Facebook, and Instagram.

**Sample size calculation:** The sample size was determined based on previous research conducted by Al-Khalifa KS et al., [2]. Using a single proportion formula as below:

$$n = \frac{1.96^2 p(1-p) (DEFF)}{d^2}$$

Where, p=Estimate of the expected proportion

d=Desired level of absolute precision

Assuming the current event rate to be at least 80%.

Keeping a 5% confidence limit, for p=0.05

$$n = \frac{1.96 \times 1.96 \{0.8 \times (1-0.8)\}}{0.05 \times 0.05}$$

n=246

To ensure statistical accuracy, a minimum of 246 respondents were needed for the study. However, 30% more subjects were recruited to account for possible non responses.

**Inclusion criteria:** The online survey included dental private practitioners, existing academicians, and postgraduates, from various dental colleges who showed a willingness to participate.

**Exclusion criteria:** A person refusing consent to participate was kept as an exclusion criterion.

## Study Procedure

The study's questions were structured in three parts, which aimed to measure knowledge, attitude, and practice of ethical SM use for professional purposes. The questionnaire comprised nine items, including Yes/No and multiple-choice questions, which were reviewed by expert colleagues for face validation. To ensure clarity and avoid ambiguity, a pilot study was conducted on 10 participants who provided feedback on the questions. After validation among five subject experts, all nine questions had "Acceptable" content validity, with a Content Validation Ratio (CVR) ranging from 0.60-1. After taking into account the feedback received, some modifications to the questionnaire were made to make it more comprehensive and clear.

The survey was disseminated among all postgraduate groups and various dentist associations on Facebook and Instagram throughout India. It was administered via Google Forms, and participants were invited to take part voluntarily through several WhatsApp groups, as well as on Facebook and Instagram.

## STATISTICAL ANALYSIS

The survey responses were collected and entered into a Microsoft Excel sheet. The data was analysed using Statistical Package for the Social Sciences (SPSS) version 16.0 and response patterns and trends were identified using the Chi-square test ( $p < 0.05$ ). Descriptive statistics, like frequency distributions and percentages, were used to analyse the data. Statistical analyses allowed for significant relationships between variables to be identified and valuable insights to be gained into the knowledge, attitudes, and practices of dentists regarding their ethical use of SM for professional purposes.

## RESULTS

A total of 319 respondents participated. The survey achieved a 316 (99%) response rate, as 3 (1%) of respondents who reported not using SM sites for professional purposes were excluded from the study. Before participating, all participants were asked to provide their consent to ensure they were fully informed and willing to take part in the research.

The demographic data of 316 participants is shown in [Table/Fig-1]. Out of them, 199 (63%) were females and 117 (37%) were males who completed the questionnaire. Among the females, 58

Age and gender distribution				
Age (years)	Male	Female	Total	p-value
20 to 29	51 (28.0%)	131 (72.0%)	182 (100%)	0.001
30 to 39	47 (52.2%)	43 (47.8%)	90 (100%)	
40 to 49	18 (43.9%)	23 (56.1%)	41 (100%)	
50 to 59	1 (33.3%)	2 (66.7%)	3 (100%)	
Total	117 (37.0%)	199 (63.0%)	316 (100%)	
Mean±SD: 31.28±6.87				
Profession and gender distribution				
Profession	Male	Female	Total	p-value
Academician	55 (48.7%)	58 (51.3%)	113 (100%)	0.005
Private practitioner	37 (31.9%)	79 (68.1%)	116 (100%)	
Postgraduate student	25 (28.7%)	62 (71.3%)	87 (100%)	
Total	117 (37.0%)	199 (63.0%)	316 (100%)	
Questions		Yes	No	Total
Do you use any Social Media (SM) networks/sites/apps?		316 (100%)	0 (0.0%)	316 (100%)
Social networking site/app users out of 316 dentists			Number of users	Percentage (%)
Facebook			223	70.6
Instagram			241	76.3
Twitter			63	19.9
YouTube			52	16.5
LinkedIn			106	33.5
WhatsApp			258	81.6
Telegram			1	0.3
Duration of using Social Media (SM) networks/apps			Number of users	Percentage (%)
Less than a year			21	6.6
1-3 years			28	8.9
3-5 years			29	9.2
More than 5 years			238	75.3

[Table/Fig-1]: Demographic information on ethical usage of Social Media.

(51.3%) were academicians, 79 (68.1%) were private practitioners, and 62 (71.3%) were postgraduates. Among the males, 55 (48.7%) were academicians, 37 (31.9%) were private practitioners, and 25 (28.7%) were postgraduates.

The majority of the participants 238 (75.3%) have been using SM sites and apps for more than five years. The most commonly used platforms were WhatsApp 258 (81.6%), Instagram 241 (76.3%), and Facebook 223 (70.6%).

The information about dentists' knowledge related to the ethical usage of SM is presented in [Table/Fig-2]. When asked about their knowledge regarding Electronic Protected Health Information, it was found that 153 (48.4%) of participants knew about it, but 101 (32.0%) were unsure, with a p-value of 0.02. The study revealed that 124 (81.0%) of participants knew about patients' names and ages as part of Electronic Protected Health Information, whereas 123 (80.4%) knew about patients' physical and mental health. However, only 25 (16.3%) and 19 (12.4%) of participants were aware of Electronic Protected Health Information related to patients' financial information and patients' relatives' addresses, respectively. In addition, 156 (49.4%) of participants were aware of the DISHA platform.

Regarding the privacy of patient information on SM, 264 (83.5%) of participants knew that posting or sharing any patient information without consent is a violation of their privacy, which can lead to penalties. Furthermore, 208 (78.8%) participants were aware of the fine associated with violating a patient's privacy, 191 (72.3%) answered about the potential suspension of their license, 133 (50.4%) recognised compensation, and 98 (37.1%) acknowledged imprisonment.

The attitudes of dentists towards using SM ethically is highlighted in [Table/Fig-3]. The study found that 181 (57.3%) of dentists use SM for professional purposes. However, 227 (71.8%) of the participants

believed that SM posed a potential risk to patient privacy. A total of 202 (89.0%) of the participants felt that posting videos or photos of patients, and 180 (79.3%) felt that unauthorised disclosure of the

Questions		Private practitioner		Postgraduate student		Academician		Total participant		Test value
		Numbers	%	Numbers	%	Number	%	Numbers	%	
Do you know what is electronic protected health information?	Yes	60	51.7	29	33.3	64	56.6	153	48.4	$\chi^2=11.99$ , df=4, p-value=0.02
	No	20	17.2	24	27.6	18	15.9	62	19.6	
	Not sure	36	31.0	34	39.1	31	27.4	101	32.0	
If Yes, what does electronic protected health information include?	Patient's name and age (years)	56	93.3	23	79.3	45	70.3	124	81.0	$\chi^2=14.24$ , df=10, p-value=0.16
	Patient's address	48	80.0	20	69.0	39	60.9	107	69.9	
	Data related to patient's physical and mental health	56	93.3	22	75.9	45	70.3	123	80.4	
	Patients' relatives address	3	5.0	5	17.2	11	17.2	19	12.4	
	Patients' financial information	5	8.3	9	31.0	11	17.2	25	16.3	
	Patients' government IDs	11	18.3	7	24.1	8	12.5	26	17.0	
Are you familiar with DISHA under which posting or sharing any patient information on Social Media (SM) is a violation of a patient's privacy?	Yes	56	48.3	34	39.1	66	58.4	156	49.4	$\chi^2=10.49$ , df=4, p-value=0.03
	No	29	25.0	27	31.0	16	14.2	72	22.8	
	Not sure	31	26.7	26	29.9	31	27.4	88	27.8	
Do you know posting or sharing any patient information on Social Media (SM) without consent is a violation of a patient's privacy and can attract penalties?	Yes	96	82.8	75	86.2	93	82.3	264	83.5	$\chi^2=2.64$ , df=4, p-value=0.61
	No	6	5.2	6	6.9	5	4.4	17	5.4	
	Not sure	14	12.1	6	6.9	15	13.3	35	11.1	
If yes, what actions patients can take for violating his/her privacy?	Suspension of license	67	69.8	54	72.0	70	75.3	191	72.3	$\chi^2=4.64$ , df=7, p-value=0.79
	Penalties or fine	70	72.9	65	86.7	73	78.5	208	78.8	
	Imprisonment	38	39.6	27	36.0	33	35.5	98	37.1	
	Compensation	54	56.3	43	57.3	36	38.7	133	50.4	
	Any other...	2	2.1	1	1.3	2	2.2	5	1.9	

**[Table/Fig-2]:** Knowledge regarding ethical usage of Social Media (SM) among dentists. Chi-square test

Questions		Academician		Private practitioner		Postgraduate student		Total participant		Test value
		Numbers	%	Numbers	%	Numbers	%	Numbers	%	
Do you feel that dentists are using Social Media (SM) ethically?	Yes	42	37.2	80	69.0	59	67.8	181	57.3	$\chi^2=37.22$ , df=4, p-value=0.001
	No	42	37.2	14	12.1	9	10.3	65	20.6	
	Not sure	29	25.7	22	19.0	19	21.8	70	22.2	
Is Social Media (SM) a potential risk to patients' privacy?	Yes	83	73.5	84	72.4	60	69.0	227	71.8	$\chi^2=3.53$ , df=4, p-value=0.47
	No	6	5.3	13	11.2	8	9.2	27	8.5	
	Not sure	24	21.2	19	16.4	19	21.8	62	19.6	
If yes, then what are the different ways by which it may breach a patient's privacy?	Posting videos/photos of patients	68	81.9	80	95.2	54	90.0	202	89.0	$\chi^2=5.59$ , df=8, p-value=0.69
	Unauthorised disclosure of the patient's identity	59	71.1	76	90.5	45	75.0	180	79.3	
	Discussing patient's information with another colleague	41	49.4	60	71.4	41	68.3	142	62.6	
	Presenting the cases at conferences	32	38.6	32	38.1	31	51.7	95	41.9	
	Any other...	1	1.2	0	0.0	0	0.0	1	0.4	
Is presenting patient cases on Social Media (SM) forums with visual images without the patient's knowledge justified?	Yes	26	23.0	17	14.7	18	20.7	61	19.3	$\chi^2=5.45$ , df=4, p-value=0.24
	No	69	61.1	87	75.0	56	64.4	212	67.1	
	Not sure	18	15.9	12	10.3	13	14.9	43	13.6	
If not, then what are the ethical issues involved with posting information about a patient?	Breach of patients' confidentiality	63	91.3	79	90.8	46	82.1	188	88.7	$\chi^2=5.86$ , df=8, p-value=0.66
	Not taking valid consent from the patient	51	73.9	69	79.3	39	69.6	159	75.0	
	Violation of institutional protocols	32	46.4	41	47.1	20	35.7	93	43.9	
	Stigmatisation and discrimination	27	39.1	18	20.7	11	19.6	56	26.4	
	A breach in patient's trust	46	66.7	63	72.4	33	58.9	142	67.0	

**[Table/Fig-3]:** Attitudes regarding ethical usage of Social Media (SM) amongst dentists. Chi-square test

patient's identity could lead to a breach of patient privacy. Moreover, 212 (67.1%) of the participants stated that presenting patient cases on SM forums without the patient's knowledge was not justified. In addition, 188 (88.7%) of participants believed that breaching a patient's confidentiality was an ethical issue involved with posting information about a patient. Finally, 159 (75.0%) of the dentists gave importance to obtaining valid consent from the patient before posting any information about them on SM.

Practices regarding ethical usage of Social media among dentists is presented in [Table/Fig-4]. Dentists were asked whether they take consent before posting or sharing information about patients on SM. The results showed that 248 (78.5%) of dentists responded yes. Out of these, 183 (73.8%) took written consent from the patient and 68.1% took verbal consent from the patient. Additionally, 252 (79.7%) dentists practiced de-identification measures before posting or sharing a patient's image. Out of those, 233 (92.5%) dentists used blurring out faces and nametags, and 153 (60.7%) used the removal of all identifying information, including identifiable marks, and tattoos.

Moreover, the survey revealed that 197 (62.3%) of dentists did not attend any sensitisation programs. Only 85 (26.9%) attended and out of those, 51 (60.0%) of dentists attended less than two programs per year.

SM can be a useful tool for qualitative researchers if used in an ethical manner that prioritises privacy and confidentiality. Encouraging researchers to explore the benefits of this innovative method could lead to new insights and perspectives that can enhance the research process. However, it is important to consider any potential risks and ensure that the benefits of using SM outweigh any potential negative impacts on research participants. By conducting research responsibly and thoughtfully, we can continue to push the boundaries of knowledge and understanding [11].

It is essential to ensure that patient privacy, confidentiality, and informed consent are protected. When communicating through SM, it is crucial to exercise caution and care to maintain ethical standards and good practices [12]. SM is an effective tool for dental education [13,14] and can be successfully integrated into private practices [15], as demonstrated by studies conducted in India.

According to the present survey, most of the participants were private practitioners and postgraduate students. Almost all dentists have been using SM for more than five years, with WhatsApp, Instagram, and Facebook being the most popular platforms. The study's findings are consistent with previous research, emphasising the significance of healthcare professionals accepting this usage and being mindful of its professional implications [16-18].

Questions		Academician		Private practitioner		Postgraduate student		Total participant		Test value
		Numbers	%	Numbers	%	Numbers	%	Numbers	%	
Do you consent before posting or sharing any patient's image or information on Social Media (SM) networks?	Yes	78	69.0	100	86.2	70	80.5	248	78.5	$\chi^2=16.57$ , df=4, p-value=0.002
	No	29	25.7	10	8.6	9	10.3	48	15.2	
	Not sure	6	5.3	6	5.2	8	9.2	20	6.3	
If yes, then what type of consent do to take?	Verbal	48	61.5	73	73.0	48	68.6	169	68.1	$\chi^2=8.96$ , df=6, p-value=0.17
	Written	51	65.4	78	78.0	54	77.1	183	73.8	
	Video	13	16.7	13	13.0	6	8.6	32	12.9	
	Audio	8	10.3	3	3.0	2	2.9	13	5.2	
Do you practice any de-identification measures before posting or sharing a patient's image or videos?	Yes	83	73.5	97	83.6	72	82.8	252	79.7	$\chi^2=7.34$ , df=4, p-value=0.11
	No	15	13.3	11	9.5	4	4.6	30	9.5	
	Not sure	15	13.3	8	6.9	11	12.6	34	10.8	
If yes, then what are different de-identification measures used by you before posting or sharing a patient's image or information on Social Media (SM) networks?	Blurring out faces and nametags	78	94.0	90	92.8	65	90.3	233	92.5	$\chi^2=2.76$ , df=6, p-value=0.84
	Ensuring not to include any photographic evidence of the place or location of treatment	43	51.8	61	62.9	43	59.7	147	58.3	
	Remove all identifying information, including identifiable marks, tattoos, etc	46	55.4	66	68.0	41	56.9	153	60.7	
	Any other...	0	0.0	1	1.0	0	0.0	1	0.4	
Have you attended any faculty development programs/ workshops/webinars/lectures regarding the ethical usage of Social Media (SM)?	Yes	25	22.1	43	37.1	17	19.5	85	26.9	$\chi^2=17.37$ , df=4, p-value=0.002
	No	68	60.2	67	57.8	62	71.3	197	62.3	
	Not sure	20	17.7	6	5.2	8	9.2	34	10.8	
If yes, then how many lectures or webinars have you attended in a year?	Less than 2	18	72.0	21	48.8	12	70.6	51	60.0	$\chi^2=5.85$ , df=4, p-value=0.21
	2 to 5	6	24.0	17	39.5	5	29.4	28	32.9	
	More than 5	1	4.0	5	11.6	0	0.0	6	7.1	

[Table/Fig-4]: Practice regarding ethical usage of Social Media (SM) among dentists. Chi-square distribution test

## DISCUSSION

The use of SM has become an important part of our personal and professional lives, and all healthcare workers must be trained on how to use it appropriately [8]. SM and networks have become valuable means of information sharing due to their low cost, democratic nature, and adaptability. However, the misuse of these platforms, as well as ethical and legal violations resulting from their uncontrolled use, may cause significant harm and result in unfavourable legal outcomes [9]. SM in healthcare must balance data benefits with privacy concerns. User confidentiality is crucial, and issues of data misuse must be prevented [10].

Few studies in the past literature have given contradictory results stating that medical students lacked sufficient knowledge about the hazards of online SM [19] and even lacked awareness of potential ethical issues [20]. Nevertheless, in the past few years, there has been tremendous improvement in knowledge and usage of these social platforms for healthcare usage. With the increasing shift towards e-platforms in dental education, it is crucial to focus on teaching the major challenges that arise, such as effectively managing health knowledge, communicating efficiently, maintaining ethical standards, addressing concerns over user privacy, and handling negative feedback [21]. These challenges should be given more emphasis in the curriculum to prepare dental students for the realities of the digital age.

In the present survey, a concerning 62.3% of individuals had not participated in any awareness or sensitisation programs regarding the ethical implications of SM usage. This means that patient privacy and confidentiality may not always be protected, which underscores the importance of promoting education and awareness in this area.

As a trainee, it is crucial to develop professional online etiquette early on, obtain appropriate written consent, and ensure that identifiable patient information is not disclosed through SM [22,23]. One can follow the guidelines for dental photography provided by Robert EA et al., which emphasise the importance of cloning adjacent skin, blurring, using an opaque box, and applying coarse pixilation. These guidelines can help maintain the confidentiality of patient information and protect their privacy [24].

### Limitation(s)

One limitation of the present study pertains to the data collection method used, which involved an electronic survey. The present survey method assumes that respondents have access to and are comfortable using technology. Consequently, it may not be easy to differentiate between active SM users and those who have accounts but do not actively use them. Future research should analyse individual SM platforms' effects on dental practice and education among healthcare workers in large groups.

### CONCLUSION(S)

The study found that while dentists have a fair understanding, they still maintain positive attitudes and ethical practices toward their patients' privacy needs on SM. Nonetheless, it is crucial to arrange regular workshops and training programs to educate dentists on the ethical use of SM for professional purposes. It is also important to prioritise timely updates to existing policies and guidelines to regulate the use of SM.

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